Self-measured blood pressure vs ABPM in the diagnosis of hypertension

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DOI: https://doi.org/10.1016/0895-7061(95)97678-k

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SELF-MEASURED BLOOD PRESSURE vs ABPM IN THE DIAGNOSIS OF HYPERTENSION. D. Holm, J. Steurer, W. Vetter*, Department of Internal Medicine, University Hospital, Zurich, Switzerland.

Both, ambulatory blood pressure (ABPM) and blood pressure self-measurement (SM) are used in the diagnostic work-up of hypertension. In the present study the validity of SM was compared with ABPM. 79 patients with mild hypertension were included. ABPM was performed by using a Space-Labs device (90 207), SM with a semiautomatic oscillometric device (Visomat OZ2). In group 1 patients (n=48) performed 1 single daily morning SM (6a.m.-8a.m.) and in group 2 (n=31) 2 SM in the morning (6 a.m.-8 a.m.) and 2 in the evening (6p.m.-8p.m.). In each group SM values of day 1-3 and 4-7(8) were pooled. ABPM was performed at day 1 and day 7. Dipping was defined as a decrease in mean night systolic and/or diastolic blood pressure of $\geq$ 10%. In group 1 mean SM blood pressure values were 143±14 in the first and 142±15 mmHg systolic in the second period and 92±11 and 90±11 mmHg diastolic, in group 2 142±19 and 139±17 mmHg systolic and 90±12 and 89±12 mmHg diastolic. Respective values for ABPM-day were in group1 141±11 at day 1 and 142±12 mmHg systolic at day 7 and 91±8 and 91±9 mmHg diastolic. Only 3 of the 71 (4.2%) cases showed a non-dipping 24h-ABPM profile. In SM the standard deviation of the mean difference (SDD) decreased from group 1 to group 2 from 9.9 to 7mmHg systolic and 6 to 5 mmHg diastolic. In ABPM no decrease was observed in SDD: 5.3 and 7.3 mmHg systolic and 4.8 and 5 mmHg diastolic. In SM correlations coefficients (r) between the first and the second period increased from 0.58 to 0.86 systolic and from 0.7 to 0.85 diastolic. In ABPM the respective values were 0.78 and 0.6 systolic and 0.68 and 0.67 diastolic.

The following conclusions can be drawn from our results 1. The nearly identical values in mean blood pressure, SDD and correlations demonstrate, that SM is as precise as ABPM when multiple daily measurements are performed. 2. ABPM is the only method to detect non-dipping. However, in our patients with mild uncomplicated hypertension this phenomen was very rare. 3. Because of the easier application of SM in general practice and its higher acceptance in patients, SM is a good candidate in replacing ABPM in the routine diagnostic work-up of hypertension.

Key Words: Hypertension, self-measurement, ABPM

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MICROALBUMINURIA, LEFT VENTRICULAR MASS AND AMBULATORY BLOOD PRESSURE IN ESSENTIAL HYPERTENSION.

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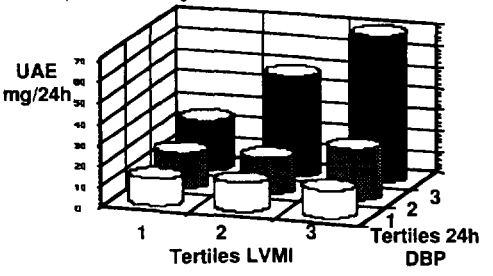
Microalbuminuria (MALB) is a potential marker of risk in essential hypertension. Previously we describe a relationship between MALB and left ventricular mass (LVM) independent of office BP values. Objective: To assess if the relationship between MALB and LVM is independent of a more representative BP values as such the ambulatory BP. Design and methods.Patients with essential hypertension, aged 25 to 50 years old, never treated with antihypertensive drugs, were included in the study. The inclusion criteria was: a) absence of diabetes, renal disease or urinary tract infection; b) echocardiography suitable for measurement of LVM; c) Urinary albumin excretion (UAE) was estimated in urine of 24 hour in two separated days and d) good quality ambulatory blood pressure monitoring during 24 hours. LVM was calculated by the Devereaux formula and refered to height (LVMI g/m). UAE was measured using a immunonephelometric assay (Behring Institue) and MALB was considered when UAE≥30mg/24h in the two days. AMBP was performed using an oscilometric device (Spacelabs 90202 or 90207) during a regular working day. Readings were programmed every 20 min between 6 am to midnight and thereafter every 30 min. Mean of 24 hours, awake and sleep periods for systolic and diastolic blood pressure were calculated. Results. One hundred and fifthy one patients (96 male, mean age 37±8 yr, BMI 27.7±3.7 g/m2) were included. The mean values of UAE was 30.1±52.3 mg/24h and the LVMI 140.6±44.1 g/m. The percentage of MALB was 28% and LV hypertrophy 34%. A significant relationship between UAE and LVMI was observed indepedent of diastolic ambulatory BP, age and sex. The relationship is show in the figure.



Conclusions. Patients with essential hypertension and MALB had higher LV mass at the same diastolic BP values. Assessment of MALB can be useful for stratification of risk on hypertensives

microalbuminuria, left ventricular hypertrophy, ambulatory blood pressure, essential hypertension

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LONG-TERM FOLLOWUP OF UNTREATED WHITE-COAT HYPERTENSIVE PATIENTS. William B. White,* Wendy Susser, Ellen J. McCabe, and George A Mansoor, Section of Hypertension and Vascular Diseases, University of Connecticut Health Center, Farmington, CT

Recent cross-sectional and prognostic studies of white-coat hypertension (WCH) have suggested that an office BP > 140/90 mmHg is not predictive of hypertensive morbidity when the awake ambulatory BP is < 135/85 mmHg. To evaluate the long-term changes in office and ambulatory BP, and the white-coat effect (office-awake BP), we restudied untreated WCH patients (office BP > 140/90 mmHg with awake BP < 135/85 mmHg and white-coat effect > 20 mmHg systolic or 10 mmHg diastolic) who had their first ambulatory BP recording > 12 months previously and had not been treated with antihypertensive drug therapy. Recordings were performed with either Accutracker or QuietTrak recorders under the same environmental conditions. Patients with substantial changes in employment status (e.g, retirement), weight/exercise (> 10 % change), or drugs that might affect BP were excluded. Studies were performed 37 ± 26 months (range, 15-119 months) apart:

Parameter	Study 1	Study 2	p-value
Office SBP (mmHg)	148 ± 13	149 ± 12	.647
Office DBP (mmHg)	99 ± 6	96 ± 7	.115
24-h SBP (mmHg)	120 ± 5	123 ± 7	.045*
24-h DBP (mmHg)	73 ± 5	77 ± 7	.009*
Awake SBP (mmHg)	126 ± 6	128 ± 9	.336
Awake DBP (mmHg)	78 ± 5	81 ± 8	.051*
Sleep SBP (mmHg)	104 ± 7	106 ± 7	.200
Sleep DBP (mmHg)	62 ± 6	66 ± 6	.004*
White-coat effect•(%)	100%	95 %	.919

•white coat effect (office - awake BP > 20mmHg SBP or 10 mmHg DBP)

Only five (12.5%) of the WCH patients developed one or more criteria for ambulatory hypertension (awake BP > 135/85 mmHg or BP load > 30%). Age, duration of hypertension, body mass index, baseline office and ambulatory BPs, and time lapsed between studies did not predict the change in ambulatory BP over time. These data show that 88% of patients with WCH remain as WCH over time and 95% continue to display a white-coat effect. The small subgroup who *did* become hypertensive over time were not predicted by office BP, ambulatory BP, or age.

Key Words: **white-coat hypertension, ambulatory BP, white-coat effect, outcomes**

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INAPPROPRIATE PHYSICIAN PRESCRIBING HABITS OF ORAL NIFEDIPINE CAPSULES IN HOSPITALIZED PATIENTS. **Faiz Rehman, George A. Mansoor, and William B. White,* Section of Hypertension and Vascular Diseases, University of Connecticut School of Medicine, Farmington, Connecticut.**

Despite the absence of an approved FDA indication, the use of oral/sublingual nifedipine for 'acute' hypertension has become a widespread practice among physicians. To assess the clinical circumstances for which the drug was being prescribed, dosing of oral nifedipine capsules was studied prospectively in three central Connecticut hospitals (private-nonteaching, university, and community-teaching). Through evaluation of computerized pharmacy and medical records, data were collected on diagnostic reasons for ordering nifedipine, pre- and post-treatment BPs, dosing frequency, clinical documentation associated with drug prescription, and adverse events. Physicians and nurses at the respective hospitals were unaware of the conduct of the study. The prevalence of nifedipine capsule administration for all 3 hospitals was 3.4% (152 dosings/4498 hospitalized patients/2 months). Practice habits and BP changes did not differ among hospitals. Ten mg was the most common dose prescribed (96%), however, multiple doses were given in 63% of cases. Sixty-three per cent of nifedipine orders were given over the phone for arbitrary and asymptomatic BP elevations and 98% of orders lacked bedside patient evaluation. Followup of BP was performed within 1 hour in 51% of patients, 24% in 2 hours while in 25%, there was no documentation of followup until 2-6 hours after nifedipine dosing. Mean pretreatment BP was 186/94 ± 20/16 mm Hg, (range, 150/50 to 250/125 mmHg). Blood pressure fell -32/-16 ± 22/16 mm Hg (range, -92/-90 to +8/+28 mmHg) and was related to the level of pretreatment BP ($r = 0.53$, $p < 0.0001$ for systolic BP, and $r = 0.49$, $p < 0.0001$ for diastolic BP). Large, asymptomatic BP reductions were common (prevalence > 30/15mmHg = 66%). One hypertensive patient with angina experienced severe hypotension accompanied by myocardial infarction. These data demonstrate inappropriate prescribing habits of oral nifedipine in hospitalized patients characterized by lack of proper assessment prior to drug dosing, highly arbitary treatment parameters that were written without regard for symptoms, and slow followup for evaluation of clinical response.

Key Words: **nifedipine capsules, hypertensive urgency, physician practice habits, hospitalized patients**